

**REMARKS**

The reference to related application was added to recite the patent application. The specification and claims were amended in sections so as to exactly reflect the prosecution history during the parent case. Claim 8 therefore stands allowed. Claims 5-7 are subject to prosecution during the pendency of this divisional application. Claims 5-7 were rejected as been obvious in view of Phillips, USSR, Hosman or Blass in further view of Hettlage. Applicant requests reconsideration. Applicant requests that the examination particularly note that invention is determined by a consideration of both the problem solved and the solution thereto. Claims 5-7 contain square and circular cross-sectioned and straight and bent shaped sections in a selectable waveguide, as a new combination as determined during the prior prosecution. The problem solved is not discussed at all the cited references. As such, the new combination cannot be considered as obvious, as the new combination is not suggested for solving the problem solved of being able to selectively isolate orthogonally polarized signals.

21 "The conventional waveguide switch has two selectable position  
22 settings for aligning two curved waveguide section bends  
23 symmetrical about a rotating axis. The curved selectable waveguide  
24 section does not use reflecting surfaces, but rather circular or  
25 rectangular cross section waveguide sections."; "The bent waveguide  
26 section 20 and the straight waveguide section 14 can have either a  
27 square or circular cross section and sized for the frequencies of  
28 interest; and "The waveguide cross sections 14 and 20 remains

1 unaltered from the antenna feed port 10 to either of the linear  
2 port 22 and the circular port 16. The cross section areas of the  
3 waveguide sections 14 and 20 remain fixed within the selectable  
4 waveguide. Because the waveguide cross section remains unchanged,  
5 no mechanism exists for polarization modifications from antenna  
6 feed port 10 through the waveguide sections 14 and 20 to the ports  
7 22 and 16. Consequently, the waveguide does not degrade  
8 polarization isolation. The waveguide cross sections 14 and 20 may  
9 be square and in this case the signals are propagated on TE01 and  
10 TE10 waveguide modes. The waveguide cross section can also be  
11 circular and the signals 18 and 24 are propagated on orthogonal  
12 TE11 waveguide modes. Hence, the waveguide cross section of the  
13 sections 14 and 20 is preferably preserved throughout the rotating  
14 member 30."

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16       The present inventions have two significant defining  
17 characteristics to solve a particular problem. The first  
18 characteristic is that the two waveguide sections have a different  
19 shape respecting each other, that is, one section is straight and  
20 the other is bent at 45 degrees. The other characteristic is that  
21 the cross-sectional area of the waveguides must be such that there  
22 is no coupling between orthogonally polarized signals, that is, the  
23 cross-sections are either circular or square, so that orthogonal  
24 signals may simultaneously propagate through the waveguides without  
25 being distorted by each other and thereby remain isolated from each  
26 other, to thereby solve the undisclosed problem of concurrent  
27 communication of orthogonal signals through either one of the  
28 selectable waveguides. Claim 5 was amended to claim that the shapes

1 are either straight or bent at ninety degrees, and have cross  
2 sectional area that is either square or circular for enabling the  
3 concurrent communication of orthogonally polarized signals through  
4 the waveguides.

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6       The cited references do not solve the problem of providing  
7 dual port routing of concurrently communicated orthogonally  
8 polarized signals. In particular, Hosman discloses a curved  
9 waveguide 19, Lanctot 117' discloses a rectangular waveguide shown  
10 clear in Figure 1, Hettlage discloses a curved waveguide 9,  
11 Phillips discloses curved waveguides 35, 30 and 32, Vogeley shows a  
12 disjointed waveguide 22 and 14 cause distortion of or coupling  
13 between orthogonally polarized signals. Blass discloses a  
14 rectangular cross section of waveguide 6. Tyrrell discloses curved  
15 waveguides 12 and 13. Lanctot 079' discloses rectangular waveguides  
16 12 and 13. Miller discloses a rectangular waveguides Y, X1 and X2.  
17 USSR discloses only a single waveguide section. These waveguides  
18 are unsuitable for the solving the problem solved by the present  
19 inventions.

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21       The cited references do not teach nor suggest a switch having  
22 straight and bent waveguides having square or circular cross  
23 sections for routing signals to a pair ports enabling concurrent  
24 communications of orthogonally polarized signals remaining isolated  
25 from each other during concurrent communication through either one  
26 of the waveguides. In this unique configuration, isolated  
27 orthogonally polarized signals can be concurrently communicated and  
28 routed to the selected port without distorting each other. Surely,

1 the cited references to not teach the problem solved by the present  
2 inventions.

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4       The present office action concedes that the claimed invention  
5 is not anticipated by the prior art. The claimed invention relies  
6 upon the combination of straight and other ninety degree bent  
7 shapes, and square and circular cross sections so that orthogonal  
8 probes can be used to detect orthogonal signals that are not cross  
9 coupled during communication through the waveguide. The rejection  
10 of claim 5 claiming different shaped propagation waveguides, as  
11 obvious lacks comprehension of the purpose of the invention and the  
12 purpose of the explicitly claimed shaped conduits. The invention  
13 relies on the use of circular and square cross sections and the use  
14 of straight and ninety degree bent shapes that enables the  
15 propagation of orthogonally polarized signals without signal cross  
16 coupling, SO THAT, the use of orthogonal polarized sensitive probes  
17 can then be used to isolate the polarized signals of interest that  
18 are concurrently communicated through the waveguide. Such a  
19 problem, and of course, such a solution, is not addressed in the  
20 cited references, hence the arrangement in claim 5 can not possibly  
21 be deemed obvious in view of the cited references. The obviousness  
22 rejection based upon different shapes, admittedly not anticipated  
23 by the cited references, is a simplistic rejection based on mere  
24 identification of prior art elements, without understanding and  
25 analysis as to why the particularly claimed inventions are  
26 nonobvious. When the reasons for particularly claimed  
27 circular/square and straight/90° bent conduits are firstly  
28 understood as propagation conduits that do not cross-couple

1 orthogonally polarized signals, then solving a completely unknown  
2 problem, and hence completely unobvious, then the claimed  
3 combination could be understood as such, and allowance being  
4 imminently proper. The claims particularly claim that one waveguide  
5 shape is straight and the other is ninety degree bent for selective  
6 coupling, and that either one or both can have a circular or square  
7 cross-section for signal isolation without cross coupling. This  
8 arrangement and the isolation reason this combination is not taught  
9 in the prior art.

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11       The cited references do not solve the problem of providing  
12 dual port routing of concurrently communicated orthogonally  
13 polarized signals. In particular, Hosman discloses a curved  
14 waveguide 19, Lanctot 117' discloses a rectangular waveguide shown  
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18 between orthogonally polarized signals. Blass discloses a  
19 rectangular cross section of waveguide 6. Tyrrell discloses curved  
20 waveguides 12 and 13. Lanctot 079' discloses rectangular waveguides  
21 12 and 13. Miller discloses a rectangular waveguides Y, X1 and X2.  
22 USSR discloses only a single waveguide section. These waveguides  
23 are completely unsuitable for solving the problem solved by the  
24 present inventions as particularly claimed. The cited references do  
25 not teach nor suggest the claimed combination.

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1       The cited references do not teach nor suggest a switch having  
2 straight and 90° bent waveguides having square or circular cross  
3 sections for routing signals to a pair of ports enabling concurrent  
4 communications of orthogonally polarized signals remaining isolated  
5 from each other during concurrent communication through either one  
6 of the waveguides. In this unique configuration, isolated  
7 orthogonally polarized signals can be concurrently communicated and  
8 routed to the selected port without distorting each other. Surely,  
9 the cited references do not teach the problem solved by the present  
10 inventions, nor the solution thereto. Allowance of claims 5-7 is  
11 respectfully requested.

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Respectfully Submitted

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Derrick Michael Reid

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